

the communication line. If a response to the query is found **912** to indicate that the connected device is an input, then the input is validated **908**. If not, the controller **200** may evaluate **914** whether the response to the query indicates that the connected device is an output device. If so, then the connected device is added **916** to an output device list. If not, then the method **900** ends without classifying the connected device as an input or output.

[**0067**] Referring to FIG. **10**, the controller **200** may execute the illustrated method **1000** in order to validate an input device, e.g. power source. At step **1002**, the input voltage (**V1**) on the input port coupled to the input device is measured. **V1** is then evaluated **1004** with respect to a configured range, i.e. a predetermined range of values deemed allowable for all input devices, a class of input devices to which the input device belongs, or specific to the input device. If **V1** is found **1004** to be in the predetermined range, then the input device is added **1006** to a list of connected input devices. If not, then the devices deemed to have been effectively disconnected and the “On Device Disconnect” method of FIG. **11** is executed **1008**.

[**0068**] Adding **1006** an output to an output device list and adding an input device to a list of connected device may include creating entries in a data structure including some or all of the fields below for each input or output device. In some embodiments, separate tables may be maintained for input and output devices, i.e. an input device table and output device table.

TABLE 2

Device Table								
ID	Description	Default Priority	Type	Required Current	Max Current	Required Voltage	Max Voltage	Bus
101	Charger	1	In	0	500	3.7	5.6	1
58	Radio	2	In	0	200	3.7	5.6	2
78	Camera	1	Out	300	350	3.6	5.3	1

[**0069**] Referring to FIG. **11**, the controller **200** may execute the illustrated method **1100** in response to detecting disconnection of a device, such as at step **1004** in the method **1000** or in response to other events that indicate disconnection has occurred. The method **1100** may include evaluating **1102** whether the device is an input or output device, this may include evaluating the “Direction” field in the entry of a data structure corresponding to Table 1 or Table 2 corresponding to the identifier of the device determined to have been disconnected. If the device is found **1102** to be an input device, then the “Flap Count” field for the device is increased **1104** by one and the device is marked **1106** as disconnected, such as by changing the “Connected” field to 0. If the device is not found to be an input device, and is found **1108** to be an output from the “Direction” field, then the device is marked **1110** as disconnected, such as by changing the “Connected” field to 0 for the entry corresponding to the device.

[**0070**] Referring to FIG. **12**, the controller **200** may execute the illustrated method **1200** to initiate monitoring of ports, such as in response to being switched on. The method **1200** may include clearing **1202** values in input and output tables, the input and output tables being the input table and output table referenced above with respect to FIGS. **5**, **6** and **7**. The method **1200** may then include looping **1204** through

each port and monitoring **1206** each port. Monitoring **1206** each port may include performing the method **1300** of FIG. **13**.

[**0071**] Referring to FIG. **13**, the controller **200** may execute the illustrated method **1300** to monitor a port. The method **1300** may be performed for each port. The method **1300** may include evaluating **1302** whether a device is connected to the port. This may include sensing a non-zero voltage or current on the port. If a device is found **1302** to be connected to the port, then the method **1300** includes evaluating **1304** whether a connected list includes a device as being connected to the port, i.e. the connected input devices list of step **1006** or the output devices list of step **916**.

[**0072**] If so, then values are read **1306** from the port and device table values for the device are updated **1308**. For example, the current voltage and current current values may be measured and stored in a data structure having the data entries of Table 1, Table 2, or some other data structure. Other values that may be read may include available power (Coulombs or Watt-hours), current temperature, change in temperature, current state of charge (e.g. for a battery), consumed Coulombs (e.g., by a Coulomb counter), input type (power supply, generator, storage device), capacitance, resistance, efficiency, and reliability. If a device is not found in the connected list for the port, then the method **800** of FIG. **8** is executed **1310**. If no device is found **1302** to be

connected and an entry is found **1312** in the connected list for the port, then the method **1100** of FIG. **11** is executed **1314**.

[**0073**] FIG. **14** illustrates a method **1400** that may be executed by the controller **200** to select an input to couple to an output. In particular, the method **1400** may be executed to select **706** an input line **204a-204c** to be coupled to an output line **208a-208c**. The method **1400** may be executed with respect to each output line **208a-208c** having a device coupled thereto. The method **1400** may include evaluating **1402** whether there are any configured inputs, i.e. are there any connected devices in the connected input devices list. If so, then the configured inputs are retrieved **1404** from the list, i.e. the input lines **204a-204c** that are in the list. Any inputs in the list that are no longer have devices connected may be excluded **1406**. The manner in which an input device is detected as no longer being connected may be as described in FIG. **10**. The input devices that are connected and configured are then ordered **1408** by priority.

[**0074**] The method **1400** then loops **1410** through the configured and connected inputs in order of priority, and, evaluates **1412** whether the connected and configured input has capacity. Whether an input has capacity may include evaluating a voltage on the input and evaluating usage of the input. For example, if the a power capacity (Watts) of the